

# CELEBRATING OUR ENGINEERING HEROES



# Celebrating Our Heroes



## Message from the Dean

What a year!

In 2008-2009 Cal Poly Engineering took great pride in the outstanding achievements of its students, faculty and alumni, many of which are highlighted in these pages.

But due to the fiscal crisis in California, this past year also marked unprecedented challenges for the college. Indeed, this publication, which looks very different from past issues, is a visible example of how the budget emergency has affected us.

An online Annual Report is one small measure we are taking to close a \$3.5 million college deficit incurred as a result of CSU mandated, but unfunded, enrollment growth and a projected \$1.2 million reduction in State funding to the college. Other steps taken by the college and university include reducing enrollment, imposing a hiring freeze, enlarging labs and classes, deferring equipment and technology purchases, and requiring faculty and staff—from the President down to custodians—to take two furlough days per month, or a 10% salary reduction.

Even with these budget reductions, we remain dedicated to offering the unique Cal Poly experience that is loved by alumni, valued by corporate partners, and honored by students. Our goal is to provide a corps of highly skilled, job-ready engineers to California and the nation--engineers who can fuel the economic engine and solve the world's pressing challenges.

Cal Poly engineers are responding to these challenges! Even as students, they are developing sustainable building materials, designing solar and wind energy systems, working to improve energy efficiencies, innovating products that will help provide clean water to developing countries, and designing new biomedical devices.

This magazine is dedicated to our bright students—our heroes!—for their accomplishments today and their dedication to the goal of improving life for us all, and to our alumni and friends who support these efforts. Now more than ever, gifts from the individuals and corporations make all the difference in maintaining the excellence of Cal Poly Engineering.

# Celebrating Our Heroes



## Message from the Dean's Advisory Council Co-Chairs

California and the world need highly skilled engineers to solve the huge challenges of our era, such as the need for clean water, a higher quality of life that uses less energy and produces fewer emissions, improved medical devices, and computing and communications infrastructures for developing countries. As the leading source of engineers for California and one of the leading engineering schools in the U.S., Cal Poly is called upon provide quality engineering talent to tackle these very complex and acute problems.

Of course, the worldwide recession has made for a difficult year for the college and continues to burden the coming year due to the significant reduction of State funding. As a result, Cal Poly Engineering must focus resources on the most important priorities.

One of those priorities is the time-to-degree and graduation rate for engineering students. Cal Poly lags on these two measures compared to the schools with whom we compete. The DAC has made recommendations to the Dean, with the goal of improving time-to-degree to 4-4.5 years, thereby saving students' tuition and living expenses and also enabling them to enter the workforce sooner. Improving "through-put" also frees up room for more new students to enter.

In the coming year, the DAC will continue to investigate how to improve graduation rates, evaluate the graduate program, and consider how to increase participation by under-represented groups. We will also assist and advise the Dean regarding how best to handle the budget crisis.

Cal Poly is an incredible institution graduating top quality engineers at bargain costs, but it cannot continue to do so without help. Please consider doing what you can to contribute to Cal Poly Engineering, so it can continue to graduate the world's best engineers ready and eager to solve the world's greatest challenges.

Geoff Tate, Chair

Laura Pickering, Co-Chair

# Celebrating Our Heroes



## College of Engineering

### 2008-2009 Highlights

- Cal Poly was named by U.S. News & World Report for the second year in a row as the No. 1 public-master's engineering program in the nation. Cal Poly's industrial engineering was named the top program in the nation, while the civil, computer, electrical and mechanical engineering programs were each ranked as the top program at a public university.
- Applications for admissions increase. The college had 7,794 applications for Fall 2008, and offered admission to 43.3%. The average SAT for the 1,101 new, first-time freshmen enrolled was 1250; the average GPA was 3.86.
- Female freshman enrollment increased from 15.6% in Fall 2007 to 18.2% in Fall 2008, and the Hispanic freshman enrollment also rose from 13% to 13.9%.
- Cal Poly founded a Master of Science degree in Biomedical Engineering, the first in the CSU.
- Jon Monett (IE '64) established the Quality of Life Plus Laboratory with a gift of \$500,000. The facility is dedicated to the development of technology to aid disabled veterans.
- The Mustang '60 Project Shop in the Bonderson Projects Center opened, thanks to a gift from John (ME '65) and Connie Nielsen.



- The year-long Interdisciplinary Senior Design/Capstone Sequence, a new initiative launched in Fall 2008, provided industry-sponsored projects to six student teams.
- Cal Poly and the University of Southern California initiated the Viterbi School of Engineering Integrated Masters of Science Program (VIP) that allows Cal Poly undergraduates to take courses in electrical and biomedical engineering and apply those units towards master's degrees at USC.
- Cal Poly and UC Santa Barbara founded the Center for Collaborative Engineering Research and Education to expand opportunities for students and faculty.
- The Global Automatic Identification Technologies (PolyGAIT) Lab was approved as a university research center.
- The Multicultural Engineering Program received the President's Diversity Award.
- Engineering Days summer camp hosted 93 high school students, 63% of whom were from underrepresented groups. The program received \$75,000 in corporate support.
- Cal Poly students and faculty and over 100 local K12 students enjoyed a live link-up with NASA Astronaut Gregory Chamitoff (EE '84) aboard the International Space Station.
- Cal Poly hosted the 2008 Annual Engineers Without Borders-USA West Coast Region Workshop for hundreds of students and practicing engineering professionals.
- The sixth annual International CubeSat Developers Workshop brought together representatives from more than 45 universities, 50 companies and organizations, and 12 countries.
- Central Coast Space Day offered activities for anyone with an interest in space.
- Cal Poly hosted the NASA Lunar Regolith Excavation Challenge in which 20 university and private sector teams competed.
- Cal Poly was one of three universities in the nation to receive a quarter-scale unmanned Yamaha RMAXTM Helicopter from Northrop Grumman.

## **Student Team Achievements**

- Cal Poly's Society of Women Engineers won eight national awards, including the Gold Award for Outstanding Large Collegiate Section.
- Cal Poly Society of National Hispanic Professional Engineers (SHPE) was awarded the Blue Chip Chapter Award, as well as placing 1st and 2nd in the national design contest.
- Cal Poly won the American Society of Civil Engineers (ASCE) Robert Ridgway Award as the nation's most outstanding chapter.
- The Concrete Canoe team won 1st in both the Men's Endurance and Co-ed Sprint races, and captured 3rd overall at the National Concrete Canoe Competition
- Cal Poly ME students won the Parker Hannifin Chainless Challenge with their hydraulic bicycle.
- Cal Poly swept the national Undergraduate Team Aircraft Design competition, taking 1st, 2nd, 3rd, and 4th. Cal Poly also came in 2nd in Undergraduate Team Engine Design.
- A student-built CubeSat was launched into orbit from NASA-Wallops Flight Facility. The Minotaur rocket also launched other picosatellites via Cal Poly-developed P-POD deployers.
- A multidisciplinary Cal Poly San Luis Obispo and Cal Poly Pomona team captured the inaugural KTLA Viewers' Choice Award for their Tournament of Roses Parade float.
- Cal Poly took 1st in the student chapter booth competition at the International Symposium on Microelectronics.
- A team of civil and architectural engineering students won the National Seismic Design Competition hosted by the Earthquake Engineering Research Institute.
- The Cal Poly Supermileage team took second place at the Shell EcoMarathon for achieving 2,358.7 miles per gallon.
- Cal Poly was one of the three North American teams to compete in the International Enhanced Safety of Vehicles Collegiate Student Safety Technology Design Competition in Stuttgart, Germany.

## **Student Success**

- Civil and environmental grad student Tricia Compas was awarded a grant by the Clinton Global Initiative and the Wal-Mart Foundation for developing a water treatment system for disaster zones.
- VTC Enterprises named Cal Poly Business/Industry of the Year because of a project by Cal Poly Engineering students Paula Gijon and Chittayong (Jao) Surakitbanharn.
- PolyHouse made dramatic improvement in the home of a 16-year-old disabled girl. Students raised more than \$100,000 in donations for the home makeover.
- ME graduate student Mario Garcia, took 1st in the Graduate Engineering & Computer Science category at the 23rd Annual CSU Research Competition.
- Senior Jon-Peter “JP” Meckel won 1st for his presentation at the American Society of Mechanical Engineers North American Pacific District Student Professional Conference.
- BMED students Leif Anderson was named Cal Poly’s Scholar Athlete of the Year and Josh Cutts was named to the Academic All-Big West Conference winter sports team.
- Senior Steffen Hausler was named Cal Poly Student Employee of the Year.

## **Faculty Achievements**

- Multicultural Engineering Program director David Cantu was named the nation’s Outstanding MEP Director.
- Dr. Tryg Lungquist (ENVE) and Dr. Tali Freed received patents for the technology for a water purification system and RFID tagging system.
- Dr. Liz Schlemer received the President's Community Service Award.
- Dr. Jianbiao Pan (IME) won 1st Place at the international IPC APEX EPO® poster contest.
- Drs. Patrick Lemieux and John Ridgely (ME) developed the Cal Poly Wind Power Research Center.
- Dr. David Marshall (AERO) received a \$2.8M grant in the second phase of his NASA-sponsored project, the largest single grant ever received by a Cal Poly Engineering researcher.

## **Alumni Success**

- Stephanie Brown-Trafton (IE ’04) won the Olympic discus title—the first time in 76 years that a U.S. woman has won the gold in the event.
- Randell H. Iwasaki (CE ’82) was appointed as director of the California Department of Transportation (Caltrans).
- John Sweeney (CE ’89) was named president of the 14,000-member Cal Poly Alumni Association.
- Gregory Chamitoff (EE 84) was named by the College of Engineering as its 2008 Honored Alumnus.
- Dr. Rory Cooper (EE ’85, M.S. EE ’86) was featured on a special edition Cheerios cereal box to commemorate the 28th National Veterans Wheelchair Games.



# Celebrating Our Heroes



## **Alvaro Martinez**

### **Mechanical Engineering senior**

After Alvaro Martinez's mom passed away in 2004, he grew up with his grandmother. She watched him graduate from Cal Poly in June.

"My grandmother always wanted me to go to college—it just took a little while," says Alvaro, who first attended community college after being laid off as a technician for a commercial airliner.

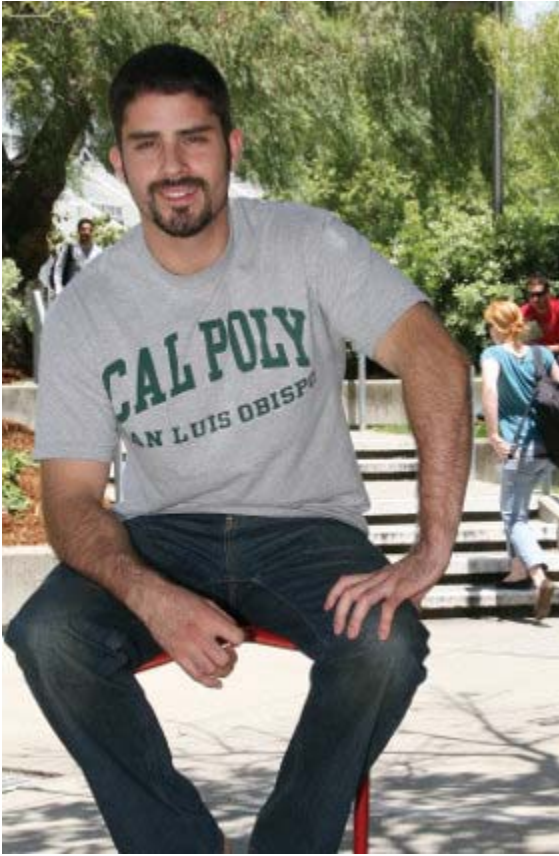
For his senior project, Alvaro helped design and build the drivetrain and overspeed protection for a wind turbine nacelle. Sporting a Mustang wind vane, the nacelle will be used at the Cal Poly Wind Power Research Center.

"I was attracted to the project because it's about renewable energy and it involved a lot of different engineering disciplines, like composites—the faring itself is made out of fiberglass and steel, and the wind vane is aluminum," notes Alvaro.

“The innovative aspect of our design is its brake system. This is a utility-type turbine; it will provide great exposure for students interested in going into the wind energy industry.

“I’m really into energy, really enjoying studying fluid dynamics and thermodynamics,” says Alvaro. “But, I tell you, being an engineering student is stressful; I can’t imagine working too. That’s why I’m so grateful for scholarships—they make it possible for me to be where I am.”

# Celebrating Our Heroes



## Jaime Salazar

### Mechanical Engineering senior

When people talk about “sustainability,” they’re usually referring to sustaining life on Earth; but Jaime Salazar’s senior project could help sustain human civilization on the moon.

Jaime and his Society of Hispanic Professional Engineers (SHPE) team designed and built an external combustion motor that feeds off renewable thermal energy. Dubbed “StirTech,” the project took 1st Place in the national SHPE design contest.

Whether or not StirTech makes it to the moon, Jaime hopes to use his engineering education to improve life. “Speaking as a mechanical engineer, we’re always looking for ways to make things more efficient, less energy-intensive,” he says. “I’m hoping to contribute to the future in this way.”

Jaime credits his professors, SHPE, and scholarships with his own success in college. His parents are field workers—Jaime will be the first in his family to earn high school and college degrees—but his family clearly values education. “My mother has twelve brothers and sisters, but all my cousins have gone or are going to

college,” he notes.

“Dad wants me to value my education, so I pay my own tuition, and scholarship help is big—instead of working full-time, I only have to work 30 hours per week.”

# Celebrating Our Heroes



## Nicole Riegel

### Industrial Engineering senior

George E. Hoffman would have approved of Nicole Riegel—particularly her work on PolyHouse, the annual class project to renovate the home of a local disabled individual or family.

Professor Hoffman modeled his own belief in the importance of being kind and generous. While still on faculty, he funded a student scholarship award; and when he passed away in 1997, his family established the George Hoffman Memorial Scholarship.

In fitting tribute to George Hoffman's legacy, Nicole, the 2008-2009 recipient of the Hoffman scholarship, served as the PolyHouse project manager of "Sami's Needs," the team of students that assessed the special home design and equipment requirements of a 16-year old severely disabled girl.

"PolyHouse raised more than \$50,000, so we were able to install a reclining bathroom chair to help Sami's grandparents care for her, and even a special outdoor swing," says Nicole.

“I am so glad I did this project! As engineers, we’re always trying to make processes and products to help people. It was so neat to actually use project management to help the community and serve people.

“The best moment? When all the neighbor kids came over to play in the new yard and we put Sami in her swing.”

George would have agreed.

# Celebrating Our Heroes



## Robbie Camann

### Civil & Environmental Engineering graduate student

Robbie Camann says that when he came to Cal Poly, he had no calluses.

Now, after nine months working on a project to test the design and seismic performance of walls made with composite rice straw blocks, Robbie has calluses and “a greater appreciation of how things really work.”

The recipient of a C & D Chrones Scholarship, Robbie has also contributed to the development of a building material that is made from recycled waste and provides natural insulation, thereby decreasing the consumption of energy for heating and air conditioning.

“I spent two years in industry as a structural design engineer, but came to Cal Poly to learn more about LEED-certified building design,” he says. “The rice straw project fell into my lap.”

LEED certification measures building sustainability—it is designed to promote design and construction practices that reduce the negative environmental impacts of buildings.



“A building made of rice straw blocks would be LEED Platinum because you’d get points for diverting waste, for greater insulation, for energy efficiency, and even, as we’re finding, for seismic protection,” explains Robbie. “It’s great that the scholarship I receive helps promote this kind of research.”

# Celebrating Our Heroes



## **Steve Barr**

**Environmental Engineering senior**

## **Tricia Compas**

**Civil & Environmental Engineering graduate student**

Steve Barr and Tricia Compas agree: a project like the Polytech Waterbag goes way beyond classroom learning. Both students were part of the team that developed the innovative, low-cost water treatment system for disaster relief zones.

The Polytech Waterbag project got off the ground when Steve and fellow ENVE student Dan Frost won first place in the 2007 Innovation Quest contest, which included a \$14,000 prize provided by Cal Poly alumni. These funds have been used in R&D that has taken the Waterbag from concept to prototype.

The next round of major funding came when Tricia won a \$14,500 grant from the Clinton Global Initiative-

University and the Wal-Mart Foundation for intense challenge testing of the product. And both Tricia and Steve received scholarships: Steve received a Unocal Environmental Education Scholarship, and Tricia received an award from the National Science Foundation for her graduate studies.

Steve, who graduated at the end of Winter Quarter, found that the Waterbag project confirmed his passion for his major. He now works for an environmental remediation company.

“Projects are what makes Cal Poly special—we are better students, better engineers because we have funding to do projects like the Polytech Waterbag,” he says.

“I learned a lot technically by working on this project,” says Tricia. “But the gifts and funding we received enabled us to put together a multidisciplinary project team, and that team collaboration has been one of the most meaningful aspects my education.

“Just as importantly, funding enabled us to take our idea beyond the lab. Ultimately, I came to realize through my work on the Polytech Waterbag, along with my participation in Cal Poly Engineers Without Borders, that as an engineer, I can have an effect on the world.”

# Celebrating Our Heroes



## AERO

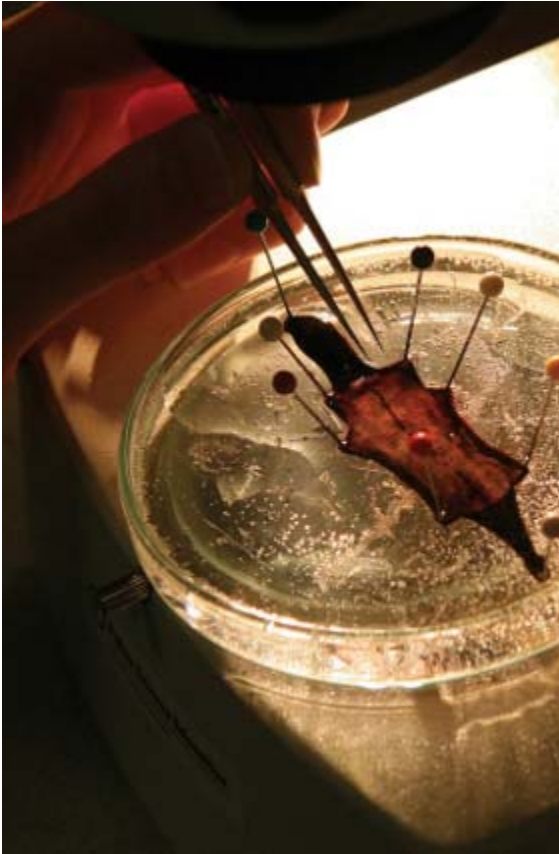
### Aerospace Engineering Highlights

- U.S. News & World Report named Cal Poly AERO 3rd in the nation for public-master's programs.
- Dr. Kira Abercromby and Dr. Kristina Jameson joined the department. Abercromby acquired specification from NASA for studying orbital debris, while Jameson acquired a high vacuum chamber for studying ion propulsion.
- Bruce Wright joined the department as a lecturer after a 30-year career as an aircraft designer with Lockheed-Martin Skunkworks.
- Cal Poly received a quarter-scale, unmanned Yamaha RMAX™ Helicopter from Northrop Grumman to be used for multidisciplinary robotics research.
- Alumnus Eldon Price (AERO '49) made a gift of \$50,000 to the department, while Garry LeGare donated a \$32,000 Glass Goose aircraft kit.
- Student-built CubeSat CP6 was launched into orbit. Cal Poly-developed P-POD deployers also launched picosatellites from NASA, the Aerospace Corporation, and Hawk Institute for Space Sciences.
- The International CubeSat Developers Workshop brought together representatives from more than 45 universities, 50 companies and organizations, and 12 countries.
- AERO seniors swept the national Undergraduate Team Aircraft Design competition, taking 1st, 2nd,

3rd, and 4th. Cal Poly also won 2nd in Undergraduate Team Engine Design.

- Bryan Morrissey was the top master's program graduate for the College of Engineering.
- The AERO Industry Advisory Board gave cash awards to seniors Robert Ehrmann and Natalie Smith for their design work on the Human Powered Vehicle.
- Tanner Sims (M.S. AERO '09), now a U.S. Air Force officer, will fly missions into hurricanes as a pilot on loan to the National Oceanic and Atmospheric Administration.

# Celebrating Our Heroes



## BMED/GENE

### Biomedical & General Engineering Highlights

- Cal Poly established an M.S. degree in Biomedical Engineering.
- Jon Monett (IE '64) established the Quality of Life Plus Laboratory dedicated to the development of technology to aid disabled veterans.
- Dr. David Clague led a team of 20 graduate and undergraduate students in biofluidics research.
- Dr. Scott Hazelwood researched the effects of bisphosphonate treatment on postmenopausal osteoporosis.
- Dr. Robert Szlavik and students worked on a project to advance the simulation, modeling and experimental application of biological neural systems and integrated neural-electronic systems.
- Cal Poly BMED students won 3rd place and Honorable Mention in a national design competition for innovation to aid disabled workers.
- The BMED Industry Advisory Board was established to help evaluate the undergraduate and graduate programs, aid fundraising, and advance alumni relations.
- BMED grad student Katie Robinson received the Outstanding Woman in Engineering & Technology Award from Cal Poly Society of Women Engineers.

- Leif Anderson was named Cal Poly's Scholar Athlete of the Year.
- Emily Hakun (B.S. GENE '08, M.S. ENGR '08) took 1st Place in the 2008 National SWE Collegiate Technical Poster Competition.
- Lt. Victor Glover (GENE '99), U.S. Navy Test Pilot, returned to campus to give a special presentation to K12 students about how to become a pilot or astronaut.
- Philadelphia Eagles starter Chris Gocong (BMED '06) mentored middle schools students, who were competing in a state engineering contest.



# Celebrating Our Heroes



## CE/ENVE

### Civil & Environmental Engineering Highlights

- U.S. News & World Report ranked Cal Poly's civil engineering program first in the nation for public-master's universities.
- Dr. Gregg Fiegel was named the 2008 Outstanding Faculty Advisor by the ASCE.
- Cal Poly Society of Civil Engineers won the prestigious ASCE Robert Ridgway Award.
- The Concrete Canoe won 1st in Men's Endurance and Co-ed Sprint races and 3rd overall at the National Concrete Canoe Competition.
- Cal Poly Society of Environmental Engineers (SENVE) won best in design concept at the "Wastewater From the Kitchen and Beyond" competition.
- SENVE received the 2nd Place Student Chapter Award from the Air & Waste Management Association.
- Cal Poly Society of Civil Engineers took 1st overall at the ASCE Pacific Southwest Regional Conference.
- Grad student Tricia Compas received a \$14,500 grant from the Clinton Global Initiative for her development of the Polytech Waterbag. Dr. Tryg Lungquist received a patent for developing the

technology for the product.

- Nicole Stromsness was named the college-wide Outstanding Graduating Senior for Contributions to the University.
- Sheila Shideh and Nicole Stromsness won Outstanding Women in Engineering & Technology Awards from Cal Poly Society of Women Engineers.
- Katie Spangler (CE) and Josh Shiffrin (ENVE) received Professional Advancement Awards from the department Industry Advisory Board.
- ENVE alumni gathered for the 40th anniversary of the program, the nation's first undergraduate environmental engineering major.
- Randell H. Iwasaki (CE '82) was appointed director of the California Department of Transportation (Caltrans).

# Celebrating Our Heroes



## CPE

### Computer Engineering Highlights

- U.S. News & World Report named Cal Poly's computer engineering program first in the nation for public undergraduate comprehensive universities.
- The program celebrated its 20th anniversary.
- Dr. Chris Clark (CPE/CSC) helped establish the International Computer Engineering Experience (ICEX), a collaborative effort between CPE and international partners that allows students to apply their technical knowledge in an international context.
- ICEX brought five students to Malta to map ancient cisterns using underwater robots.
- Dr. John Oliver (CPE/EE) and Dr. Al Liddicoat (CPE/EE) undertook funded research projects on behalf of Western Digital and ViaSat, respectively.
- Drs. Al Liddicoat (CPE/EE), John Pan (IME), Jim Harris (CPE/EE) and Lynne Slivovsky (CPE/EE) worked on a multidisciplinary research project that will improve the CPE curriculum under the auspices of a NSF grant.
- Dr. Lynne Slivovsky (CPE/EE) was named to the IEEE Educational Society Administrative Committee, which oversees all of the Society's activities.

- Dr. Chris Clark (CPE/CSC) traveled to Svalbard, Norway to help plan a North America-Norway educational program to develop technology for marine monitoring.
- Female students made calls to all accepted female freshmen in a special effort to increase the number of women enrolled in CPE or EE.
- The 2009 Outstanding Seniors included Ryan Morton (Academic Excellence and Contributions to the University), Brian Smith (Contributions to the College), and Erik Brockman (Community Service).
- CPE students named Dr. Chris Clark Most Outstanding Professor,” and “Most Inspirational CPE Professor.”

# Celebrating Our Heroes



## CSC/SE

### Computer Science & Software Engineering Highlights

- U.S. News & World Report named Cal Poly's computer program first in the nation for public, non-doctoral universities.
- The Software Engineering program achieved its initial accreditation.
- Major renovations to the Open Lab, the server room, and faculty conference room were made possible by endowments established by Gary Bloom and Bert and Candice Forbes.
- New courses aligned with student interest and industry trends in areas such as parallel computing, interactive entertainment, data mining, computational finance, computer security, scientific visualization, and robotics.
- The TeachScheme/ReachJava summer workshop offered educators from eight states an opportunity to learn about Cal Poly's innovative first-year computer science curriculum.
- Dr. David Janzen and Dr. John Clements studied the cost of using test-driven development (TDD) in a first-year programming course under a grant from Lockheed Martin.
- Dr. Chris Clark helped establish the International Computer Engineering Experience (ICEX), which brought six students to Malta to map ancient cisterns using underwater robots.
- For their software engineering capstone project, Dr. David Janzen's students developed web and

BlackBerry application for Intuit.

- Graduate student Brett Bojduj won Best Presentation at the Groupware and Network Services Workshop 2008 of the Information Processing Society of Japan.
- SimpleDraw, an Apple iPhone drawing app developed last quarter by Samuel Li and Andy Huynh in CSC-484, was featured by iPhone appstore as a “Top Free Productivity” app.
- A Cal Poly Robotics Club team won the annual RoboRodentia contest.

# Celebrating Our Heroes



## EE

### Electrical Engineering Highlights

- For the fifth year in a row, U.S. News & World Report named Cal Poly's electrical engineering program first in the nation for public, non-doctoral universities.
- The Cal Poly Electric Power Institute established a Sustainable Energy Lab.
- Dr. Xiaomin Jin and Dr. Dean Arakaki facilitated photonics and microwave equipment donations from Agilent Technologies and Anritsu.
- Despite budget challenges, the department found creative ways to renovate and update the Electro-Chemical Energy Lab and the Multidisciplinary Project Lab.
- EE worked to improve the efficiency of all instructional labs in order to accommodate larger class sizes.
- The Electric Vehicle Club worked on refurbishing the Electric Race Car and on designing and building a solar electric charger for scooters.
- Joel Hanson was named the college-wide Outstanding Graduating Senior for Contributions to the College of Engineering.
- Justin Rucker was named the college-wide Outstanding Senior for Community Service.
- Graduate student Jessica Kiefer received the Outstanding Woman in Engineering & Technology Award from Cal Poly Society of Women Engineers.
- Graduate student Simeon Trieu was awarded a National Science Foundation Summer Institute Fellowship and worked at Peking University in China.



- NASA Astronaut Gregory Chamitoff (EE 84) was named the 2008 Engineering Honored Alumnus and served as keynote speaker at the EE Banquet.
- Dr. Rory Cooper (EE '85, M.S. EE '86) was featured on a special edition Cheerios box to commemorate the 28th National Veterans Wheelchair Games.

# Celebrating Our Heroes



## IME

### Industrial and Manufacturing Engineering Highlights

- U.S. News ranked Cal Poly IME as the top program in the nation among both public and private institutions.
- The Global Automatic Identification Technologies (PolyGAIT) Lab was approved as a university research center.
- A patent was awarded to Dr. Tali Freed and PolyGAIT in collaboration with Tanimura & Antle, on RFID tagging of reusable plastic containers.
- Dr. Liz Schlemer received the President's Community Service Award.
- Dr. Jianbiao Pan won 1st at the international IPC APEX EPO® poster contest.
- PolyHouse made dramatic improvement in the home of a 16-year-old disabled girl. Dr. Roya Javadpour's students raised more than \$100,000 in donations for the home makeover.
- IE graduate student Michael Krist, Nic Vickers (MATE), and faculty advisor Dr. John Pan took 1st in the student chapter booth competition at the International Symposium on Microelectronics.
- IME students worked with the Center for Vocation Building Technology in Thailand, an NGO focused on appropriate building technologies for developing regions.

- Dr. Liz Schlemer and Dr. José Macedo blended sophomores and seniors in a facilities design class that undertakes projects for a variety of local companies.
- IE alumnus Jon Monett (1964) established Cal Poly's Quality of Life Plus Laboratory dedicated to the development of technology to aid disabled veterans.
- Stephanie Brown-Trafton (IE '04) won the Olympic discus title, the first time in 76 years that a U.S. woman has won the gold.

# Celebrating Our Heroes



## MATE

### Materials Engineering Highlights

- Dr. Linda Vanasupa worked with the Center for Green Chemistry and Green Engineering at Yale on the design of model sustainable communities in rural China.
- Dr. Trevor Harding was invited to South Africa to initiate collaboration with Witwatersrand and Northwest Universities.
- Dr. Rich Savage co-led the first Cal Poly Engineering multidisciplinary senior project class focused on industry-sponsored projects.
- The new Micro Systems Technology Club made patterned silicon wafers.
- The student club, MESS (Materials Engineering Student Societies) won “Best Use of Theme” at Open House.
- PBS’s “The History Detectives” asked the department to help determine whether a piece of metal came from a plane flown by Amelia Earhart.
- Grad student Sean Kaylor was selected as a Sustainable Energy Fellow to address the need for energy reduction and renewable energy technologies.

- Sophomores Alex Stanley and Ryan Satcher became YouTube stars with a video on ferromagnetic fluids.
- Graduate student Matt Goebel worked on projects in Nicaragua as part of Engineers Without Borders (EWB).
- Casey Weathers placed 6th in the United States Collegiate Ski and Snowboard Association men's snowboard giant slalom championship race.
- David Taggart (MET '85) became president of Belectric, a new photovoltaic company.
- Krista Anderson (2005), Alison Souza (2002), Rodger Gabriel (2005), and Amanda Runciman (B.S. '04, M.S. '07), served as judges for the MATE technical senior projects conference.

# Celebrating Our Heroes



## ME

### Mechanical Engineering Highlights

- U.S. News & World Report named Cal Poly ME first in the nation for public-master's universities.
- Dr. Hemanth Porumamilla was named ME's Chrones Professor.
- The Mustang '60 Project Shop opened.
- Drs. Patrick Lemieux and John Ridgely developed the Cal Poly Wind Power Research Center.
- Cal Poly won the Parker Hannifin Chainless Challenge.
- VTC Enterprises named Cal Poly Business/Industry of the Year as a result of a device designed by ME undergraduates to help disabled persons.
- The Cal Poly Supermileage team took 2nd at the Shell EcoMarathon.
- Cal Poly competed in the Formula Hybrid competition thanks to Plug In America and ZERO Motorcycles.
- The Formula SAE team received a perfect score in Presentation at the Formula SAE California competition.
- Cal Poly competed in the International Enhanced Safety of Vehicles Collegiate Student Safety Technology Design Competition in Germany.

- Mario Garcia took 1st in the Graduate Engineering & Computer Science category at the CSU Research Competition.
- Anthony Gurrola was Cal Poly Engineering's top senior for academic excellence.
- Adam Loeffler received the \$3,000 Wingate Award as the outstanding student in the HVAC&R Program.
- Senior JP Meckel won 1st in presentation at the American Society of Mechanical Engineers North American Pacific District Student Professional Conference.
- William Schram (ME '06) designed and installed the first saturable reactor fault current limiter for the power grid on Southern California Edison's Avanti Circuit.



# Celebrating Our Heroes



## MEP

### Multicultural Engineering Program Highlights

- Director David Cantu was named the nation's Outstanding MEP Director and received an Outstanding Staff award from the Cal Poly Division of Student Affairs.
- MEP received the President's Diversity Award.
- The program joined the CSU Louis Stokes Alliance for Minority Participation (LSAMP), an NSF initiative to help students enroll in graduate programs.
- PIQE (Parent Institute for Quality Education) awarded 749 first-generation parents "graduation certificates" for completing the eight-week course on how to encourage their children's education.
- Exploring Engineering, an outreach program for parents of economically disadvantaged students, doubled the number of attendees during Open House.
- Cal Poly hosted the MESA Day Preliminaries with middle and high school students.
- Cal Poly Society of National Hispanic Professional Engineers (SHPE) was awarded the Blue Chip Chapter Award, as well as placing 1st and 2nd in the design competition at the SHPE National Conference.
- \$75,000 in corporate sponsored scholarships was awarded to students at the MEP Corporate Social and

Academic Recognition Banquet.

- David Sequeira served as the 2008-2009 SHPE Regional Student Representative (Region 1) and Ember Jensen served as the American Indian Science and Engineering Society (AISES) Regional Student Representative (Region 2).
- The Society of Black Engineers and Scientists (SBES) hosted a pre-college initiative at Righetti High School.
- SBES alumnus, Lt. Victor Glover (GENE '99) returned to campus to give a special presentation to K12 students about how to become a pilot or astronaut.

# Celebrating Our Heroes



## WEP

### Women's Engineering Program Highlights

- Cal Poly Society of Women Engineers won eight SWE National awards, including the Gold Award for Outstanding Large Collegiate Section.
- Cal Poly took 2nd in the national SWE Boeing Team Tech competition.
- WEP/SWE outreach and recruitment efforts helped boost the percentage of female engineering freshmen at Cal Poly to 18.2%, an all time high.
- SWE and Engineering Student Council volunteers visited 17 local classrooms during 4th Grade Day.
- 50 local Girl Scouts earned engineering badges on Girl Scout Day, a SWE outreach event.
- More than 230 students attended Building An Engineer Day in Fall Quarter. SWE offered a spring session as well, which brought 200 additional middle school students to campus.
- With over 300 student and faculty attendees and 30 company representatives, Evening With Industry provided an important opportunity for SWE members to network with possible employers.
- In cooperation with Hewlett-Packard, SWE named five Outstanding Women in Engineering and Technology, including Lisa Aukeman, architectural engineering senior; Sheila Shideh, civil engineering senior; Jessica Kiefer, electrical engineering graduate student and SWE president; Nicole Stromsness,

civil engineering senior; and Katie Robinson, biomedical engineering graduate student.

- SWE nurtured diversity by hosting social events with the American Indian Society of Engineers & Scientists (AISES), the Society of Hispanic Professional Engineers (SHPE), and the Society of Black Engineers & Scientists (SBES).
- Cal Poly SWE Facebook pages were established to keep SWE alumni connected. See <http://www.facebook.com/home.php?#/group.php?gid=20438495718>

# Celebrating Our Heroes



## Karen Bangs

An alumna gives back as a donor, as a professor, as director of program to recruit and retain women engineers.

Although Karen Bangs' parents saw the value of education and life-long learning, neither had the opportunity to go to college. With their encouragement and support, however, Karen came to Cal Poly.

"I had a great, great college experience," she says. "I am indebted to Cal Poly for exposing me to wonderful teachers, laying the foundations for a successful career, and for giving me lifelong friends. Everyone I keep in touch with has done well; and in talking with many hiring managers, I hear over and over how well respected Cal Poly is. It makes me proud."

After she graduated in 1986 with a degree in industrial engineering, Karen joined Rockwell Semiconductor Systems, which later became Conexant and then Skyworks. "Like now, that was a tough time to get a job, but the vice president of operations, John Algeo, was a Cal Poly IE grad, so I got my foot in the door."

She progressed in the company, working in three different areas, but after 19 years, Karen was ready for a

new challenge. She had stayed in touch with professors and colleagues at Cal Poly—in fact, she was a founding member of the Women’s Engineering Program (WEP) Industry Advisory Board—and landed a job as an instructor in her old department. In 2007, Karen was appointed director of WEP, the program that has built an exceptionally strong community for women engineers on campus.

“We’re doing all we can through WEP and in conjunction with Cal Poly’s nationally acclaimed Society of Women Engineers (SWE) to increase the numbers of women engineers,” she notes. “In fact, our outreach touched close to 1500 students last year with the message that engineers can make a difference in their communities and in the world, that engineers are passionate about helping people.”

Through her donations that she has given year after year, through her teaching, and through her leadership as WEP director, Karen has not only helped Cal Poly, but she has also helped young women fulfill their potential as engineers.

# Celebrating Our Heroes



## Laura Bunker

For her AERO senior design project, Laura Bunker and her team designed a Homeland Defense Interceptor, which won 1st Place in the American Institute of Aeronautics and Astronautics (AIAA) national design contest.

This year, the 2006 graduate stepped forward with a \$250 gift to help defend and protect the college during the current budget crisis.

“I know how the economy is doing and how public schools are struggling,” says Laura. “I don’t want to see Cal Poly slow down, and I know that every donation helps one more student get as good an education as I did.”

Now working as a hydraulics engineer for Boeing, Laura credits Cal Poly with giving her career opportunities—such as an internship and industry feedback on the AIAA project—that opened the door to immediate employment after graduation. She also found her on-the-job transition easier because “Cal Poly’s lab atmosphere taught me how to apply what I learned.”

Laura made her gift after attending a reunion on campus for former Engineering Ambassadors, the high-energy students who lead tours and serve the college as representatives. Laura was an Ambassador for three out her four years at Cal Poly.

“I loved seeing that amazed look on the faces of prospective students when I showed them the labs and facilities,” she says. “It was great to be able to brag about how students connect with their professors; how at Cal Poly, you’re not just a drop in the bucket,”

“When I went back to campus last year, I met a current student who had had me as a tour guide when he was looking at colleges, and he still had my card!

“I made really great friends at Cal Poly; it’s a beautiful campus and I have great memories about my time there. I want to keep returning as an alumna and do what I can to ensure Cal Poly’s superior quality of education.”



# Celebrating Our Heroes



## Mary King

Continuing her husband's legacy, Mary King supports Cal Poly's heating, ventilation, air-conditioning & refrigeration program.

Her own career as a nurse was one of service to help others. Now she supports a program that is helping the heating, ventilation, air-conditioning and refrigeration industry go "green."

Over 50 years ago, when she lived in San Luis Obispo, Mary King worked at General Hospital and was the second highest paid nurse in the city. When she wasn't working at the hospital, she did what she could to help her husband Emmett, who had come to Cal Poly because it was one of the few schools in the nation that gave degrees in Air-Conditioning and Refrigeration.

"I did all of his typewriting," Mary says. "I know he should have been doing it himself, but while I was typing, I was learning things."

When Emmett graduated in 1951, AC&R was its own department. Over time, the program and the industry evolved; today, Heating, Ventilating, Air-Conditioning and Refrigeration (HVAC&R) is offered as a

specialization in mechanical engineering. A critical emphasis in the program and in the industry is on energy efficiency. Given that ten percent of the total energy used in the U.S. goes to heating and cooling buildings, Cal Poly's HVAC&R program mission is to educate the next generation of engineers, who can design state-of-the-art HVAC&R systems, while minimizing energy consumption and reducing the impact of these systems on the environment.

After Emmett died, Mary did not think twice about continuing her donations to the HVAC&R program because she never forgot the opportunities Cal Poly had given her husband when other schools did not have the curriculum or resources to do so.

Believing that Cal Poly puts students on the road to success, Mary continues to do her part to help. "Students who come out of Cal Poly get into the industry they want, become executives, and can own their own company," she says. "They have options because of the education they received."

# Celebrating Our Heroes



## Jon Monett

Jon Monett casts his life into four distinct phases: “First I was a student, then a Cold War warrior, then an entrepreneur, and now,” he says, “I see myself as an investor in technical challenges and in people.”

Jon’s most recent investment is in Cal Poly. The 1964 industrial engineering alumnus donated \$500,000 to Cal Poly Engineering to found the Quality of Life Plus Laboratory (QL+), a multidisciplinary facility dedicated to the development and application of technology to improve the quality of life of wounded and disabled veterans.

A veteran himself, Jon joined the Air Force after high school and served four years in reconnaissance work before entering Cal Poly. Following his graduation, Jon worked in developing the tools and techniques for the collection of intelligence for the Central Intelligence Agency, a career that spanned 26 years. At retirement, Jon had risen to the position of Senior Executive responsible for managing technical activity worldwide.

On his return to civilian life, Jon started a company that became known as Telemus Solutions, a global security consulting and intelligence advisory services provider.

“When I sold Telemus, I started to think about ways to acknowledge the role Cal Poly played in my life and to show my appreciation for the men and women who, in the course of serving their country, have been wounded or disabled,” he says.

QL+ is the outcome of Jon’s wish to pay back, while investing forward to produce solutions that enhance the ability of individuals to reach their potential, despite traumatic injuries incurred in service to their country.

“I see QL+ as becoming an important center where not only regular students but also military veterans will get involved in developing meaningful products and techniques to improve lives,” he explains. “The lab is needed because companies tend to focus on products with high commercial potential, but often the issues affecting vets have less commercial application.

“I want Cal Poly students—who are so good at solving problems—to be given challenges that will exercise their creativity and innovation, resulting in solutions that will benefit those who have served our country.

# Celebrating Our Heroes



## Bob Davis

When Bob Davis talks trash, he gets passionate.

He talks about energy. He talks about resources. He talks about the potential for engineers and scientists, agriculturists, manufacturers, business planners, and entrepreneurs to work together to not only better manage our trash, but to make something out of it.

He talks about the Global Waste Research Institute (GWRI), which he has just helped launch at Cal Poly. GWRI is the product of Bob's 35 years in solid waste management and recycling and his Cal Poly foundations.

Although a math major as an undergraduate, Bob has always felt close to engineering—he's proud of the "Pseudo Engineer" ("P.E.") plaque presented to him by the engineering group at Browning-Ferris Industries (BFI), where he was vice president of Recycling. And his roommate at Cal Poly is an engineer, Conrad Young (ME '66), now president and owner of Century Tubes. It was on a 2006 road trip with Conrad that GWRI was hatched.

“We spent three days driving cross-country and visited a couple tire recycling plants I had managed,” says Bob. “That sparked an ongoing conversation about waste. Conrad has a materials engineering perspective, while I have the hands-on resource management background.

“Both of us agreed that Cal Poly has the brightest kids and faculty, who could be at the forefront in developing sustainable technologies and management policies for waste. Knowing that there is no such broad-based institute in the nation, we thought, ‘Why not establish one at Cal Poly?’”

Bob promoted GWRI among his considerable connections in waste and recycling as a collaborative effort between academia and industry. Currently the president of Waste Systems International, he is also a partner in Rubber Recovery, Inc., a board member of Waste Connections, Inc., and a board member of effENERGY, LLC, an alternative energy company.

With his encouragement, Waste Connections provided \$50,000 in seed money for GWRI, with a total gift pledge for \$1 million. It’s money that will propel Cal Poly as a lead institution in multidisciplinary research, development, education, and policy assessment and implementation in an area that impacts us all: trash. It’s an investment in what Bob calls “grave-to-cradle” innovation.